RESEARCH HIGHLIGHTS

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ACHIEVING HEALTHY INDOOR ENVIRONMENTS: A REVIEW OF CANADIAN OPTIONS

Introduction

There is convincing evidence that poor indoor air quality (IAQ) is damaging people's health. It has been linked to increases in asthma, allergies and multiple chemical sensitivities. In fact, the United States Environmental Protection Agency has rated poor IAQ as being among the top environmental risks to human health.

Since the late 1970s, the problem of poor IAQ in Canadian buildings has received intermittent attention. While a relatively well-developed policy framework exists for outdoor environment issues, with specific jurisdictions assigned legal authority, resources and responsibilities, there is no comparable accountability framework for indoor pollution. Some problems have been controlled by regulation, such as the federal government banning the use of urea formaldehyde foam insulation (UFFI), but in general, voluntary initiatives have been the main approach for addressing indoor environment issues in Canada.

Although only a small number of initiatives have been employed across the country—Europe and the US are notably much further ahead—foundations are in place for greater progress. Industry leaders now manufacture various products that have demonstrable benefits with regard to indoor air quality. New building designs, improved ventilation, filtration technologies and low-emission products are fueling rapid growth of a Canadian indoor environment industry currently valued at $1 billion annually.

With funding from Canada Mortgage and Housing Corporation and five other project sponsors—Venmar Ventilation Inc., NIKE Inc., Health Canada, Interface Flooring Systems (Canada) Inc. and Lever Pond's—Pollution Probe produced a report bringing together, for the first time, components of the indoor environment issue previously treated separately. *Achieving Healthy Indoor Environments: A Review of Canadian Options* looks at strategies for encouraging voluntary initiatives, best practices in the field, legal aspects of IAQ, and the market for indoor environmental products and services.

The purpose of this report is to identify promising options for addressing IAQ in Canada. The report explores the question of whether government regulations or voluntary initiatives are more appropriate for solving IAQ problems. The complexities of multiple jurisdictions governing private property and individual rights suggest that voluntary initiatives could be the best choice.

Encouraging voluntary initiatives

Based on research results and key informant interviews, Pollution Probe concluded that the present state of indoor environments in Canada still leaves much to be desired. The current piecemeal approach is ill-suited to achieving adequate progress on problems as complex and inherently multidisciplinary as the indoor environment.

Pollution Probe proposes a new strategy called Maximum Voluntary Initiatives for stimulating indoor environment measures. It involves a committed action network (CAN) of organizations and individuals encouraging a maximum number of voluntary initiatives. The network would publicize existing voluntary initiatives, encourage public education on indoor environment issues, discuss increased use of voluntary initiatives, support public advocacy for voluntary initiatives on specific issues, and develop government policy support.

This network would be supported by key influencers in a distributed leadership environment (DLE) who push for supportive policies. The two groups would connect by forming new alliances and creating formal interagency action committees to pursue implementation of the initiatives.

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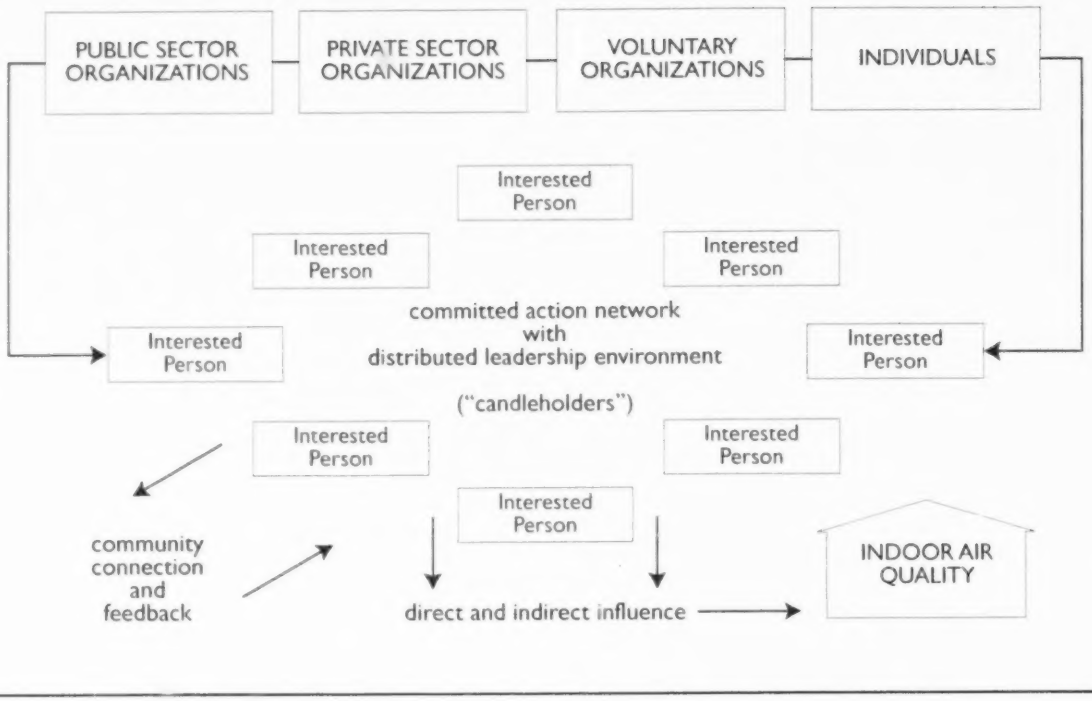
Figure 1: CANDLE structure



Committed action network and distributed leadership environment (CANDLE) do not replace existing organizations, authorities, legislative powers or formal committees. They are another front-end means of generating initiative and accelerating the agenda. They must be complemented by appropriate organizational structures and actions, public and private sector resources and initiative, government legislation and regulation, and formal stakeholder committees and alliances for implementation of specific solutions.

A complex distribution of authority between federal and provincial levels of government has, with the exception of workplace occupational health and safety, resulted in little or no legislation targeted at residential, commercial or industrial indoor environments. Given that provinces have legal authority over some aspects of the issue, an integrated federal-provincial-territorial approach may be the most effective way of addressing legal considerations concerning indoor pollution in Canada.

Key findings

Pollution Probe reviewed 20 case studies of initiatives designed to achieve healthy indoor environments. These ranged from low-emission consumer products and healthy housing projects to processes focused on improving the healthiness of indoor environments.

One of the major challenges noted is the fact that there is little data on the costs and benefits associated with healthier indoor environments. A common finding from most of the case studies was that performance is rarely measured in a uniform manner.

A dedicated effort is needed by governments, industries and other key stakeholders to develop a standard set of indoor environment health indicators. This would allow for comparisons of different materials and assessments of the overall health of buildings. Such efforts to develop a standardized set should be harmonized with similar efforts taking place in other countries.

Recommendations

Thirteen key recommendations emerged from the study:

1. The federal government should assign lead responsibility to Health Canada for coordinating issues related to the indoor environment. Health Canada has the legislative authority to take action and has shown leadership around the issue. Coordinated activities might include research, standard setting, code development and communication.
2. Health Canada should require labeling that discloses data (for example, emissions, health information, product constituents) on consumer products, building materials and furnishings. Labeling has been found to result in product improvements, but it is underutilized in Canada.
3. National and provincial building codes should specifically address indoor environment issues. Initiatives such as EnviroHome, R-2000 homes and Healthy Housing™ have

demonstrated health and energy efficiency benefits in Canada, but few of these advancements have been applied to the building codes.

4. Natural Resources Canada should encourage and support building performance assessments on all commercial, industrial and residential buildings. Such assessments have been shown to lead to improvements, but they are underutilized in Canada.

5. Governments should commit to developing policies that support voluntary initiatives, particularly in the areas of healthy housing, product labeling, emission guidelines, codes of practices for services, health claims and exposure standards.

6. Health Canada and national and provincial associations should target outreach and education on indoor environment issues to health professionals, physicians, teachers, parents and building professionals. Suggested associations include the Canadian Institute of Child Health, The Lung Association, Canadian Association of Physicians for the Environment, provincial public health associations and provincial medical associations.

7. Governments should commit more resources to research, especially in determining

   - the number, significance and sources of indoor pollutants
   - the mechanisms by which people are exposed to them
   - the health effects arising from prolonged and intermittent exposure to low-level concentrations of pollutants and complex pollutant mixtures
   - the health effects for at-risk populations such as children and seniors
   - the most cost-effective strategies for reducing pollutant sources, exposure and adverse health effects.

8. Health Canada should review and revise, if necessary, the *Exposure Guidelines for Residential Indoor Air Quality*. The existing guidelines, developed in 1987, are not designed to protect vulnerable groups, such as children and people with lung disease or other chronic illnesses.

9. Health Canada should revise the radon guideline which is currently set at five times higher than the action guideline adopted by the World Health Organization.

10. Health Canada should develop a cost-benefit analytical framework for assessing IAQ. Cost-benefit analysis has gained considerable acceptance with respect to outdoor air quality.

11. Attention should be given to fostering school-based voluntary initiatives. Generally, there is widespread concern and support regarding children's health, and school-based efforts can provide considerable leverage for influencing public opinion and achieving momentum.

12. Government and industry need to develop quality assurance programs, certification programs and/or codes of practice for targeted services, such as housekeeping and cleaning of HVAC systems, carpets and ducts. Most services in Canada that are targeted at indoor environments do not have certification, quality assurance or codes of practice. As a result, there is very little protection for consumers and no regulations preventing false claims related to indoor environment improvements.

13. Government should provide resources to support the development of information and knowledge infrastructures for indoor environments, such as the CANDLE structure outlined in the report.

Conclusion

Achieving Healthy Indoor Environments: A Review of Canadian Options provides insight into a range of important issues concerning IAQ. In addition to the information outlined in this highlight, the report includes an assessment of factors contributing to the current situation. It gives a broad definition of what constitutes a voluntary initiative, and it identifies key elements that address aspects that are lacking in existing approaches to improving IAQ.

The report provides summary findings concerning IAQ in residential, commercial and industrial buildings. As well, it includes an overview of the indoor environment industry in Canada and offers recommendations for advancing sector growth. Descriptions of the 20 case studies and other detailed information on legal aspects and key informant interviews are included as appendices. At the core of the study's recommendations resides the need for a comprehensive strategy to address indoor environment issues in Canada.

To move forward, Pollution Probe and its partners propose Canada-wide stakeholder consultations and alliance building. The process would bring together leading researchers, policy makers, academics and industry to develop a comprehensive multi-stakeholder plan for achieving healthy indoor environments in Canada.

This report provides a starting point by identifying promising options, and it serves to:

- provide consultation participants with a common, basic level of information and analysis of the issues involved and options available
- stimulate additional perspectives and options
- contribute to the process of refining, prioritizing and moving forward with selected options for achieving healthy indoor environments in Canada.

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Research Report: *Achieving Healthy Indoor Environments: a review of Canadian options, 2000*

This report is available through Pollution Probe
Phone: (416) 926-1907

Housing Research at CMHC

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